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VOL. III. NO. 8. APRIL 12, 1906.

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

THE GROUND OF THE VALIDITY OF KNOWLEDGE[1]

I. NEEDS AND THE TRANSCENDENT

IN these days, when it would perhaps not be incorrect to speak of at least an increase of interest in the epistemological problem, as indicated by current discussions in England, France and America, the problem of the cause of this increase is an attractive one to the social psychologist. Disclaiming any attempt to have studied this question exhaustively, I venture, however, by way of introduction to the discussions of this paper, to state the results of some reflection on the matter. When we find it stated, for example, that 'psychology is the key to the question of truth,' that 'truth is a form of value,' a '*gradual* achievement and construction of a common world,' the thought is suggested that that view which has been of such predominating influence on practically all other fields of thought, namely, the Darwinian theory of evolution, has at last, though somewhat tardily, reached the field of philosophy and is the leaven to the rising loaf. My conviction that 'evolution' is the new standpoint, quite strikingly different in its logical import, from which knowledge and experience are now being studied, is strengthened when I find it stated, also, that 'thought is an instrument of *adaptation*,' which, however, 'need not always copy its objects' and in which 'what works best is truest.'[2] This is indeed the language of the evolutionary theory, and is, as I believe and shall endeavor to demonstrate, on the whole quite realistic in its implications. Examination of the many other similar characterizations of the purpose and nature of knowledge and of other experiences shows them to be, without exception, I think, only restatements of, if not deductions from, the same general standpoint. Realism is, however, not always accepted as being implied in these views.

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[1] The present is the first of a series of four papers in which I purpose to deal with the various aspects of the above problem; this I might also state as the Epistemology of Scientific Knowledge and Knowing. The present article is to a certain extent introductory, and, therefore, I trust its incompletenesses will be pardoned. The subsequent papers will treat of such matters as implication, the meaning of 'in experience,' the transcendence of knowledge, perception and the 'correctness' of data, and the 'structure' of scientific knowing.

[2] Professor William James in the preface to the English translation of Höffding's 'Problems of Philosophy.'

There is, nevertheless, one charge which can with perfect justice, I believe, be brought against both the new epistemology and the old, namely, that so far both have been almost exclusively concerned with an investigation of our knowledge of pencils, chairs and the usual classroom paraphernalia, and very little with that kind of knowledge in the possession of which men actually know and can do most, namely, scientific knowledge, especially physics. The charge is particularly deserved in one quarter, since it is especially this kind of knowledge which also most closely fits the pragmatistic definitions which I have quoted. Convinced, then, that the knowledge and knowing of a Mach, a Boltzman, or a Duhem is as worthy of epistemological study, both for the above and for other reasons, as that of the man in the street, I purpose to consider the epistemology of scientific knowledge and knowing.[3]

The point of view from which I shall at present proceed is that which even the writers on the philosophy of pure experience really assume in their propagandas and appeals, namely, the common sense view that there is a plurality of individuals of the 'genus homo' endowed with something called minds, in that they are capable of having concrete experiences of various kinds, concerning which each individual may communicate with other individuals.

Concerning this point of view two statements can be made. First, if experience be regarded in those figurative ways which seem to be in such high favor with some of the 'radical empiricists,' namely, as a 'living flow,' etc., then on the whole it is in the above-mentioned stage that the *problems* concerning experience, its nature, meaning, etc., first arise. Secondly, it may be said that, even if the answer by way of the resolution of these problems should, on the one hand, point to a preceding experience more simple and without such problems, and, on the other, to a subsequent, more complex one, nevertheless the experience in which the occurrence of the problems takes place is within certain individual and subjective limits. By that I mean, as I shall later endeavor to make more clear, that the experience which forms our real starting-point, and for the resolution of whose problems the acceptance in some way of experiences both before and after is demanded, is always within the limits of the physiological and empirically conscious 'you' or 'me,' to which the philosophical writer makes appeal, and which may be called, without misunderstanding, the subject.

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[3] This is undoubtedly a large problem, including as it does such subdivisions as the purpose, validity and success, content, structure and conditions, and origin and psychology of knowledge and knowing. Some of the first of these I shall make the subject-matter of the present series of papers; the others I hope to treat of subsequently.

At any rate, whether this view be regarded as tentative and demanding of much discussion, or even, as a result of this, it appear questionable, nevertheless it will serve to make our initial use of the term 'experience' fairly unambiguous, so that if, in the resolution of certain problems, it be found necessary to modify or extend the meaning of the term, the relation of this new to the first meaning will be capable of exact formulation.

Thus, on the one hand, the charge which can be brought against many current discussions, that use is made of the term experience without having removed the ambiguities in any way, will be avoided; and, on the other, it can not be urged that we are proceeding incorrectly by defining a term rigidly at the outset of an investigation whose very purpose is to find out, if possible, those characteristics by means of which the term should be defined. For while we may admit that our primary definition, although in keeping with common sense, is, nevertheless, tentative, it gives us the advantage of something definite with which to start, and from which the more detailed nature of the cognitive experience, important both of itself and for its relations to other experiences, may be made gradually to crystallize out.

Accordingly, I think that there will be little opportunity for misunderstanding or ambiguity if I begin with the statement, that among the many experiences which conscious individuals may have there is one important class, that of *needs*. As to this last term, however, I do not know that it has been sufficiently defined, although the origin of needs may have been discussed somewhat as, possibly, one of conflict, etc.[4] But the connotation of the term makes its consanguinity with evolutionary theory evident. In general, it may be said that 'need' in the sense in which I shall use it means a felt, *conscious demand;* a demand, too, for that which is *other than* the need itself and which shall satisfy it. This last is in accordance with the general principle which may be laid down here that the *need of satisfaction* is *not the satisfaction of the need.* Now it is undoubtedly a difficult matter to get at the psychology of needs, at least to make statements concerning them which shall hold good of all. Yet I shall venture the presentation of some of their important characteristics.

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[4] Cf. Dewey, 'Studies in Logical Theory.'

In general, it may be said that the presence of the need is characterized or accompanied by a 'feeling' or experience of 'conflict,' of discordance, or of discrepancy. Keeping to our view of experience as subjective, the 'conflict' is not one of need with need in every case, but may be between experiences of another kind, or of an individual with his environment. The range is perhaps almost unlimited. But either accompanying or immediately subsequent to the 'conflict experience,' which may perhaps be taken as typical, there is the felt-need of a *readjustment.* If the readjustment is effected, either this is to be regarded as a new experience or the original experience has persisted in the 'living flow' and, as modified, has changed.

As concerning this, two important principles are to be noticed. First, that that to which, or according to which, the readjustment is to be made or is to take place may vary as the demand for readjustment varies. Secondly, that the need for readjustment dictates nothing immediately and directly as to the way in which the readjustment shall or may be effected.

Now, without attempting to get at the meaning of 'need' further than that which the above discussion presents, in virtue of the first of the above principles I shall venture to offer a *classification of needs* which will suggest at the same time differences in that to which the readjustment relates. The scheme which I present may be faulty in many ways, incomplete, and the classes may be not mutually exclusive; but I do not offer it as to any great extent final; few classifications have that honor. But it would seem to be of advantage to, if not even necessary for, our subsequent discussions, especially if, in treating of the problems which have been enumerated, at least one kind of knowledge is to be regarded as 'an instrument of adaptation,' to indicate important differences between the need of which this may be the means of satisfaction and other needs.

The most important classes of needs may be arranged as follows: (1) Sensuous-physiological, (*a*) native, (*b*) acquired; (2) emotional, (*a*) religious, (*b*) ethical; (3) esthetic; (4) intellectual, (*a*) logical, (*b*) alogical. The alogical, possibly also the logical, I would divide into (*a*) theoretical, (*b*) practical. Of the first three main divisions of this classification I shall not make much use; they are presented chiefly for the sake of completeness. But important and worthy of special attention are the intellectual needs and the means of their satisfaction.

Now it may be that all needs are those of readjustment and of means to this; and if so, and if the readjustment be looked upon as *furthering* and *conserving life* and so the very *possibility* of subsequent and *additional experience,* then all may be looked upon as *biological* in the broad sense of the term, and their close relationship to evolutionary theory becomes evident. Yet such a view carries with it the subordination of certain needs as means to others as ends and, finally, of all as means to one as an ultimate end, which may well be, indeed, just this furthering and conserving of life. But if this view is taken, then there is certainly one class, the alogical needs, whether, if many, they be coordinate or some subordinate, which, together with the means for their satisfaction, are of all the most appropriately designated as biological. It is just these which are implied by the view that 'thought is an instrument of adaptation' and that 'what works best is truest.'

That this is so will be made clearer, perhaps, by an explanation and a contrast of 'alogical' with 'logical.' By 'logical need' there is meant the *generic* felt-demand for formal *consistency,* so that when in the concrete case a conflict or discordance is experienced there is also the need experienced of readjusting the first experience so that it or the new experience will conform with this ideal of consistency. The concept of readjustment here evidently is meaningless unless it involves both conflict and removal of this; and both these can be stated in this case only in terms of an ideal consistency. The latter is presupposed in some way, as in some respect 'other' than the concrete experience which should conform to it; and although the questions of its nature and origin may be most important and admittedly difficult of answer, yet for the purpose of this paper it is not necessary to consider them.

By the 'alogical need' I may say that, first, and especially if all other needs are subordinate as *means* to the furtherance and preservation of life as *end,* that this last might be regarded as a felt alogical need, namely, the need to live. But whether this be called end or need—the terminology is indifferent—it may well be also that the ideal of logical consistency itself has originated by abstraction and generalization from that which has proved to be a successful means to such an ultimate end; and that even now in special cases the logical need is to be subordinated to this.

However, even if we admit all this, there yet appears side by side and coordinate with the logical need an *alogical in the narrower sense* of the term, as indicated in our classification. This alogical need arises, or is experienced primarily, in the conflict or discrepancy between an individual and his environment. The latter may press and threaten, and accordingly there is the need, even the necessity, of readjustment, by way of acting, of doing something, hit or miss. Hence formal consistency is not here the ideal, but, whether this be observed as a means as far as it will go, or whether it be limited or given up, *success* is what is wanted, needed in the process and means and result of readjustment; in fact the latter is meaningless here without that realization. The *generic* felt-need here is for *success*, and in the specific case the readjustment must conform to this ideal. But, in turn, it can be said that for success there must be also another 'conforming' which shall constitute its very nature and conditions and origin, and the characteristics of that which in the specific case is the successful readjustment.

Accordingly, the justification of calling the needs here involved alogical comes, first, from the ideal, success as opposed to formal consistency; secondly, from the difference in the means to this adjustment; formal consistency shows itself to be impotent after a certain point to satisfy the need; after that action is necessary, but can proceed only on a non-rational basis, by trial and the finding out of that which works best; thirdly, and accounting perhaps for the first two, at least in part, from the nature of that to which the cognitive experience as readjusted in some way conforms, in which 'conforming' success consists or on which it is dependent.

It is to these needs, then, that, chiefly for the sake of raising certain questions in as pointed a manner as possible, I shall refer hereafter as biological or alogical. They appear most sharply outlined when, granting the preservation and furtherance of life to be the ultimate end, there is the need for a means which will bring about or constitute the readjustment; for a means, therefore, through whose reliability, purely logical methods having failed or being known to be fallible, success in meeting the demand can be counted upon.

Now, undoubtedly, that kind of knowledge which is most capable of filling this rôle of a reliable means, etc., is scientific knowledge, in the usual specific sense of the term. Science can do this, because, side by side with or through the medium of that which may be called 'theoretical' science, yet in which the alogical element is also present, it gives us a *foreknowledge* of things and events. This is especially true of the physical sciences, and so, for the purpose of making my points as clear and in as simple a form as possible and yet illustratively, I shall consider the foreknowledge made possible by the physical sciences.

It is of importance to note that as concerning this capability science appears in marked contrast with philosophy and other knowledges. The former can and does 'make a difference' when appeal is made to it, for example, in the case of life and death. For that reason, and in that respect, it is important, and philosophy is not. And if it is all a matter of need, and although success in satisfying one need may be as high a good as the satisfying of another—for men have preferred death to subversion of their convictions—nevertheless upon success in meeting the demands of a threatening environment may depend even the having of the other needs, to be satisfied, if possible. Either succeed or succumb is a very real and unmistakable dilemma. But before I enter upon the discussion of this, the main question of my paper, I would refer briefly to the *structure* of that science which has been chosen as an example, namely, physics.

It may be said that in this use is made almost exclusively of 'symbolic methods.' The symbols stand for, in part at least, the qualities of things. Through the use of instruments of measurement they get a definite numerical value, giving both 'intensities' and 'extensities,' and it is made possible to discover empirical and causal laws, expressible in the form of algebraic equations. For these, oftentimes at least, a choice between different principles of interpretation is presented. Similarities and analogies among these laws lead up by repeated steps to abstract and general laws and principles, *e. g.*, those of thermodynamics. The latter form, too, the domain of theory, which is a kind of classification of empirical (in the broad sense) laws, and of hypotheses. From the theorems and propositions in this domain, the laws must be deducible according to the rules of the calculus and of logic, and be capable of exact confirmation again by the use of instruments.[5]

Although this account is brief, it serves to illustrate and make clear that which is one of the important purposes of science as a means or method of readjustment. It is to discover and describe connections between qualities or changes of the same or of different things in such a way and by such methods that, starting, say, with the perception of one, it will be possible to go in inference to one as-yet-unperceived, but under certain conditions to-be-perceived. This constitutes prediction, 'knowledge' of the future. Only if a reliable means for meeting this first need of a foreknowledge, which shall constitute an 'instrument of adaptation,' is discovered, can the more important need of establishing conditions favorable, or of inhibiting those unfavorable, to life be met.

If the inference-prediction, as it may be called in order to indicate both its nature and the way in which the general alogical purpose of scientific knowledge is attained best, is to be the means of or is to constitute the readjustment, then the question as to *what constitutes the conditions* and the procedure of *successful prediction* is of the utmost importance. For even upon the conviction that success is possible or not, as well as upon knowledge or ignorance of its conditions, there may depend alternative practical outcomes. In answering this, at the same time that it is to be recognized that the 'need of readjustment' is in no case the satisfaction of that need, it can be said also that the need itself dictates nothing directly and immediately as to the way in which the readjustment is to be effected. Success alone is the goal.

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[5] Cf. Duhem's 'La Théorie physique; son objet et sa structure,' Paris, 1906, and 'L'evolution de mécanique,' Paris, 1903. Also the writings of Mach, Poincaré and Helm.

First, then, let us ask: Can the *mere* system of inferences, taken on the one hand as a plan or a means of foresight, and on the other as a logical and psychological (natural) event, be of itself the sufficient condition of the ensurement of success?

To this the reply may be made, by some at least, that it may be this provided that 'correct data' have formed the starting-point of our inductions and that the deductions are formally correct. Even admitting this in a general way, the status of our question is only slightly altered to that of what constitutes the correctness of data. This I shall discuss in detail in a later paper of this series. But aside from this reply, and perhaps, as it will turn out, the one leading into the other, it may also be answered that, granting the formal correctness of the inference and the correctness of the data, the *ground for* its *validity* in the sense of 'successful working' is *external to the inference itself as a 'logical and psychological event.'* If this were not the case, then were all formally correct inferences successful. This necessity of an external ground is indeed admitted, as I shall endeavor to establish, in the very demand for 'correct data,' whether this term, on the one hand, be used in a limited sense or, on the other, the 'correctness' be a characteristic dependent upon or derived from, and so a part of, a system.

In these problems I believe that we are biting very near to the kernel of the epistemological nut, which I shall now take my turn in attempting to crack.

Let us start with the consideration of the actual procedure of making the inference, and assume that this is a case of predicting on the basis of a present perception that at a definite future time a perception will either take place or be possible. The inference here is, then, a sort of 'mental transition' in time.

Psychologically the making of the inference consists of a succession of symbolically formulated propositions, accompanied, let us grant, by a rational feeling of their formal correctness. The symbols are either perceived or, in the case of silent thinking, presented as symbol concepts, and they have a meaning. Yet there is evidence to show that this meaning is given or is presented very *inadequately* in the form of images (*Auschauungen*). But if not in images, the meaning is either in the 'fringe' or not in consciousness at all. Yet the propositions are understood! To this I shall recur.

It may also be of great importance that by virtue both of being able to use and of making actual use of such symbolic methods, *rela-*

tions are *known* which are *never gotten in perception* or anything patterned after *it,* and known, furthermore, with a certainty and exactness obtainable in no other way than by these methods. But, be this as it may, it will be granted for our present purposes that the inference consists of a series of propositions each of which follows of necessity, by virtue of the principles of logical implication and the rules of the calculus, from the preceding. That is, it is to be granted that the inference process is absolutely formally correct, so that by its every possible repetition the same conclusion is reached. It presents, then, a concrete case of logical necessity, uniformity and regularity.

Assuming now that the whole inference process has conformed to these requirements, what, we may ask, is our actual *attitude* psychologically toward the 'coming true' of that which is thereby predicted? Suppose it to be one of 'fair' certainty because it is felt that, side by side with formal correctness, the data also from which the premises have been derived have been correct. Then is not this certainty based on the further conviction that the correctness of the data carries with it or consists in their connection according to universal laws with that which is to occur in the future? Or that, if correctness of data means something else, namely, an unequivocal and determinate relation between the act of perception and the object perceived, is not our certainty based on the conviction that there is also a *regularly* and *uniformly* acting something which, as either implied by the uniformity or as supplementing this, will also *persist,* and bring about the predicted occurrence and so the possibility of its perception, and for which the inference process in some way stands? Is not our attitude also this, and do we not act upon it as a conviction, that, having set up certain conditions, perceived therewith, it makes no difference with the 'coming true' of the prediction what the *order* of intervening perceptive acts may be; that be this order what it may, the predicted events, say, will take place and be perceived, provided certain subjective conditions of perception are present? Is it not part of that attitude too that the prediction as a psychological event may cease to exist, may in fact be forgotten, without this interfering with its coming true?

With the acceptance of the implied *affirmative* answer to these questions, it may also be admitted that this is perhaps a devious way of putting very trite matters. But I wish to indicate therewith, as pointedly as possible, first, that the practical attitude, one acted upon and in general justified by experience, is that the ground of the success of inference is external to this both as formally correct and as a psychological or, if one prefer, as a natural event. And secondly, that this ground is to be found (how, we shall see later) in an order and uniformity, permanent and persistent, and 'other than' and yet in some way 'corresponding to' the logical and psychological order of the inference itself. What the manner of this correspondence is, is, of course, one of the fundamental problems of knowledge.

I will take it for granted, then, that the practical attitude is that such an order, universal, without exceptions, in some sense persisting, is *demanded.* What is the source of this demand, or in what conflict of discordance does it arise as something needed? The answer to this can, I believe, be stated in a twofold way.

In the circumstances of a 'readjustment' by way of prediction and foreknowledge, the desideratum is, evidently, success. Now in the first place, it is clear that, for example, with a certain event predicted, if this should not occur and so make possible its perception, assuming the subjective conditions for this to be present, there would be conflict or discordance. For the removal or avoidance of this there *must* be, accordingly, something persisting, for one thing, and, for another, acting with a regularity and uniformity to bring about the event and, with the cooperation of subjective conditions, its perception. Such a persisting regularity and uniformity does not mean necessarily that, for example, the same causes are to be present and are to bring about the same effects. It may mean this, but also that there is an accumulative action analogous to that of a series. In this way the regularity and uniformity can be made entirely compatible with *individuality.* And, in the second place, whatever may be the origin of our 'universal laws,' it will be admitted that they as judgments in some way express, or point to in the manner of *transcending* themselves, as I shall show later, an order and regularity and unequivocalness of causation. Accordingly, with an event predicted as a special case of or as derived from such a universal law, if for any reason, particularly a subjective one, the perception does not take place, then seemingly there would be a conflict by way of an exception, a case negative to universality, unless this last could be saved in some way. If, accordingly, it is only by such *universal* judgments that inference and alogical knowledge in general are possible, then an order and regularity with no exceptions is *demanded to resolve* such a possible conflict as the above, *to 'correspond to'* the universality expressed in the judgment, and to *'fill out'* those *negative cases* constituted by the absence of the act of perception. With such possible 'conflicts' and the means demanded for their resolution in mind, and admitting that the order, etc., implies persistence or permanence, as in a 'series,' let us ask where it can be found.

Evidently it is not legitimate to look to the inference itself in its psychological or logical aspects for the order which is demanded. But may not this be in the series of conscious events? Now undoubtedly there is some order to be found here. But in the first place, as we have seen, the practical attitude is that the order of the conscious events intervening between the time of the inference and that of the predicted event is indifferent. Conversely, and as a justification of this attitude, it will have been experienced that the event takes place after a preceding lack of such order. Is it not possible, then, to find the required order somewhere or in some way within the entire series of conscious events? To this it must be replied that there the order is always a limited one. And limitation, even to the extent of one exception, amounts to an absence of that uniformity which is demanded under the circumstances.

The required order is not to be found either in the inference itself or in the series of conscious events. May it not, then, be 'in' the concept of order or 'in' the universal judgment as a causal law, *admitting* the concept to have originated as above suggested? To this it must be said, anticipating our future discussions somewhat, that the required order is not 'in' the concept or the judgment in the sense of 'contained in,' but that it is in some sense 'beyond.' It can be 'in' the concept or the judgment, only in a manner quite compatible with its being 'beyond' at the same time. In this simultaneous relation of 'in' and 'beyond' the concept and judgment can be shown to transcend themselves. What the *nature of this transcendence is,* forms one of the important questions of my paper, to be discussed fully later. Since now the order is not one of conscious events taken either as an entire or as a partial series, and yet *an order* somewhere *is absolutely necessary for* the *success* of the inference, we must go elsewhere for it. It can be found only in that which, if conscious events be called *immanent,* may be termed the *transcendent,* namely, that which is 'other' than any and every concrete conscious event in you or me or any one else. The appropriateness of this term appears in its correlation with that characteristic which I shall endeavor to show holds good of all cognition, namely, its 'transcending itself,' its 'pointing' to an 'other.' Thus it will result that it is the transcendent order 'beyond,' to which the causal law and the *concept* of causal uniformity and regularity refer in transcending themselves, at the same time that they express it, and that it is in some manner 'in' them. Accordingly, as standing in this relation, it must be admitted that the 'transcendent' is known. The further details of this, constituting as they do the 'structure' of the 'knowing experience,' I shall endeavor to develop. The problem may be stated: How is it possible (or in what manner is it) that that which is transcendent to consciousness and is order, regularity, etc., should be known 'in' consciousness, whose events are characterized by a lack of uniformity, etc.? But that it is known I hope further to prove.

Accordingly, too, I hope to anticipate the possible criticisms of the use of the term transcendent which might be made because of its historical implications, etc. From the above it is evident that by it I do not mean 'thing-in-itself.' Furthermore, its use is justified not only through its correlation with the reference of the cognitive experience beyond itself, but also because of its convenience as a term which shall include in its meaning the characteristics of order, regularity, unique and unequivocal causation, permanence, unalterability and independence. All these, I shall endeavor to prove, are both *known* of it, and *demanded* as conditions for the success of alogical knowledge. And because of them the transcendent will appear to be also the *source* of knowledge and of needs. But the order as a 'demanded' order is not one experienced in all its elements. It is experienced *completely* only in the sense that it is *demanded* as *complete.* Perception, it might be said, granted that it transcends itself and points to an *object* of perception, gives us only a limited order from which we abstract the concept. But the concept in its reference points to an unlimited and universal order, which, filling in the 'negative cases,' is 'there' whether the perception is or is not.

In general we may conclude, then, that the need for a reliable means for the resolution of either one of the two typical conflicts which have been presented can be met only by a 'transcendent' which is itself order and regularity, causal agent, persistent and permanent. Such a transcendent may be said to be the fundamental condition for the success, and therefore truth, of all alogical inference and thought. It is the ultimate cooperating means by which all alogical readjustment is to be effected, the fundamental postulate or implied presupposition of all physical science.

Further considerations of the nature of the demand for the transcendent and of its relation to experience will form the subject-matter of the next paper of this series.

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DISCUSSION

PROFESSOR CALKINS'S MEDIATION

TO the uninitiate hearer, Professor Calkins's President's Address may well have seemed to be a 'reconciliation' not unlike that of the wolf and the lamb when they lay down together, the lamb in-